UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,701	10/25/2006	Julien Lefebvre	2201.0030000/RWE/ALS	2531

26111 7590 02/18/2009

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
INYARD, APRIL C	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
02/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,701	LEFEBVRE ET AL.	
	Examiner	Art Unit	
	APRIL C. INYARD	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Foreign priority to Canadian patent 2424630 is acknowledged and certified copies of the foreign priority application have been received.

This first non-final action is in response to the filing of October 25, 2006. Claims 1-19 are pending and have been considered as follows:

Claim Objections

1. **Claims 1-3 are objected to because of the following informalities:**

Claims 1-3 refer to the composition of a polymer film or film composite as "consisting of one or more layers of", suggesting that the polymer composition is made of all components listed under (a) (i)-(x) and (b) (i)-(v). The instant Markush groups are not closed groups. A Markush-type claim recites alternatives in a format such as "selected from the group consisting of A, B and C." See Ex parte Markush, 1925 C.D. 126 (Comm'r Pat. 1925). See MPEP § 2173.05(h). For example, the first outer portion of the polymer film or film composite should read: consisting of a first outer portion consisting of one or more layers of (i), (ii)..."**and**" (x), where (x) likewise defines a closed Markush-style group of a combination of one or more of (i), (ii)..."**and**" (ix) (likewise for the second outer portion (b)). The Examiner therefore considers the Applicant's meaning of the instant claims to be of the closed, Markush-type language, and interprets the instant claims accordingly. Appropriate correction is required.

There appears to be a grammatical error in Claims 1-2, lines 2-3: "a reflective film for adhesion to a construction material, which reflective film comprises". The Examiner suggests changing "which" to "wherein the". Appropriate correction is required.

Claim Rejections - 35 USC § 102 / 35 USC § 103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1 and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rieke et al. (US Patent No. 3,647,617).**

Regarding the recitation in the claims (particularly Claims 1-2 and 15-19) that the reflection film is "for adhesion to a construction material" is merely an intended use. Applicants attention is drawn to MPEP 2111.02 which states that intended use statements must be evaluated to determine whether the intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use then it meets the claim.

It is the Examiner's position that the intended use recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art and further that the prior art structure is capable of performing the intended use.

Rieke teaches a polymer-aluminum foil laminate useful in application such as building and insulation panels *(Col 1, lines 41-43)*. The aluminum foil layer has a thickness of between about 0.7 and about 1 mil *(Col 1, lines 57-60; Col 4, line 36: 0.35 mil thick aluminum foil; Col 6, line 53: foil thickness for 1 layer ranges between 0.35 and 0.7 mil)*. The aluminum foil thickness taught by Rieke is fully encompassed by the Applicant's claimed range.

Rieke discloses that ethylene adhesive copolymers may be used with co-monomers including acrylic acid and maleic anhydride *(Col 2, lines 18-31)*. Rieke teaches extrusion of a copolymer of ethylene and acrylic acid having an 8% by weight acid content onto an aluminum foil film having thickness of 0.35 mil *(Col 4, lines 30-34)*. Rieke teaches use of adhesive polymers that corresponds to the first outer portion (a) polymers (vi) and (ix), and second outer portion (b) polymers (i) and (iii). The Examiner notes that as presently claimed, there is no requirement that these first and second portions be different.

Regarding the melt index of the polymers, the Examiner has reason to believe that the polymers taught by Rieke have a melt index within the broadly claimed range because Rieke teaches extrusion of ethylene acrylic acid (8%) and order for it to be extruded one would expect it to have a value with in the claimed range.

Regarding the surface energy of the polymers, the Examiner notes that acid content contributes to the surface hydrophilicity of ethylene acrylic acid copolymers. Therefore, the Examiner has reason to believe that the 8% by weight acid content of the ethylene acrylic acid copolymer taught by Rieke will have the high surface energy desired.

Given that Rieke discloses a foil-polymer film or film composite that meets the limitations of the present claims, it is clear that such a polymer film would be capable of performing the intended use, i.e. adhered to a construction material, presently claimed as required in the above cited portion of the MPEP.

However, in the alternative, one having ordinary skill in the art would readily recognize that the Applicant's claimed melt index range(s) are known to be very broad and standard for many polymers, and it would have been obvious to the skilled artisan to select and try a melt

index specifically within the presently claimed range for the ethylene acrylic acid (8%) copolymer taught by Rieke because it is well known that when making polymer thin films, that one can vary parameters such as the melt index to yield the predictable result of improving the malleability of the polymer for subsequent processing steps.

Furthermore, regarding the surface energy, Rieke teaches use of an ethylene acrylic acid copolymer with an acid content of 8% as a polymer that has good adhesion to aluminum foil. Although Rieke does not specifically teach the surface energy of this copolymer, one having ordinary skill in the art would recognize that it is commonly known that acid content contributes to the hydrophilicity of polymeric surfaces. Likewise, it is well-known in many arts that when good adhesion between two surfaces is desired, to increase the surface energy of a surface to be adhered. These inferences of obviousness would have been drawn from creative steps that a person of ordinary skill in the art would normally employ. At the time the invention was made, it would have been obvious to one having ordinary skill in the art to try using a known step of varying the acid content of the ethylene acrylic acid copolymer and/or treating the surface to increase the surface energy in order to achieve the a surface energy optimal for adhesion of a thin film of aluminum foil to the surface of the polymer.

Therefore, Rieke teaches a reflective film that meets the limitations of **Claim 1**.

Regarding the limitations of **Claim 14**, Rieke teaches that the aluminum foil may have many small pinholes *(Col 1, lines 59-60; Cols 3-4, lines 70-75 and 1-3)*.

4. **Claims 1 and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Morris et al. (US Patent No. 6,500,556).**

Morris teaches a metal foil-polymer laminate. Morris teaches a multilayer polymer laminate, having:

a. an adhesive layer of ethylene acrylic/methacrylic acid copolymers consisting of a blend of high-acid, high-melt index and low-acid low-melt index copolymers *(Cols 1-2, lines 65-67 and 1-2)*

i. Resulting melt index of the high and low blend: 4-20 g/10 min with an acid content of about 7-12% by weight *(Col 4, lines 4-12)*

b. a polyethylene layer that can be a low density polyethylene (LDPE), a linear LDPE, a high density PE that can be metallocene catalyzed *(Col 2, lines 31-39)*

Morris provides examples for the preparation of foil-polymer laminates where the above ethylene acid copolymer adhesive blends *(see Examples and Tables)* are co-extruded with LDPE, and then coated onto a 2 mil thick aluminum foil, where the ethylene acid copolymer adhesively bonds the foil *(Col 4, lines 38-50)*.

Morris teaches that the aluminum foil that is within the Applicant's claimed thickness range *(2 mil: Col 4, lines 38-50)*.

Morris teaches an ethylene acrylic acid/methacrylic acid copolymer blend with a melt index within the Applicant's claimed range as an adhesive layer that bonds to the aluminum foil. This corresponds to the Applicant's first or second outer portion polymers (a) (vii) or (b) (i).

Morris teaches the adhesive copolymer is co-extruded with LDPE that can be low density, linear low density or high density, and can be metallocene catalyzed. This teaching corresponds to the first or second outer portion polymers (a) (i) or (b) (iv). The Examiner has

reason to believe that the melt index of the LDPE taught by Morris has a melt index within the Applicant's broadly claimed range due to the teaching that the LDPE is extruded.

Regarding the surface energy of the polymers, the Examiner notes that acid content contributes to the surface hydrophilicity of ethylene acrylic acid copolymers. Therefore, the Examiner has reason to believe that the 7-12% by weight acid content of the ethylene acrylic/methacrylic acid copolymer taught by Morris will have the high surface energy desired.

However, in the alternative, one having ordinary skill in the art would readily recognize that the Applicant's claimed melt index range(s) are known to be very broad and standard for many polymers, and it would have been obvious to the skilled artisan to select and try a melt index specifically within the presently claimed range for the polyethylene (LDPE) taught in the examples of Morris because it is well known that when making polymer thin films, that one can vary parameters such as the melt index to yield the predictable result of improving the malleability of the polymer for subsequent processing steps. Additionally, as Morris teaches extrusion of LDPE, it would have been obvious to the skilled artisan to optimize the melt index for the extrusion process.

Furthermore, regarding the surface energy, Morris teaches use of an ethylene acrylic acid copolymer with an acid content of 7-12% as a polymer that has good adhesion to aluminum foil. Although Morris does not specifically teach the surface energy of this copolymer, one having ordinary skill in the art would recognize that it is commonly known that acid content contributes to the hydrophilicity of polymeric surfaces, and Morris teaches a range of acid contents. Likewise, it is well-known in many arts that when good adhesion between two surfaces is desired, to increase the surface energy of a surface to be adhered. These inferences of

obviousness would have been drawn from creative steps that a person of ordinary skill in the art would normally employ. At the time the invention was made, it would have been obvious to one having ordinary skill in the art to try using a known step of varying the acid content of the ethylene acrylic acid copolymer and/or treating the surface to increase the surface energy in order to achieve the a surface energy optimal for adhesion of a thin film of aluminum foil to the surface of the polymer.

The Applicant's limitation regarding "for adhesion to a construction material" is considered to be an intended use, as discussed above. Given that Morris discloses a foil-polymer film or film composite that meets the limitations of the present claims, it is clear that such a polymer film would be capable of performing the intended use, i.e. adhered to a construction material, presently claimed as required in the above cited portion of the MPEP.

Therefore, Morris teaches a reflective film that meets the limitations of **Claims 1-2**.

Morris teaches use of adhesive ethylene acrylic/methacrylic acid copolymers that are heated and extruded to bond the aluminum foil to the LDPE polymer film.

Therefore, Morris teaches lamination using an adhesive **(Claim 11)** that is a thermal adhesive of **Claim 12**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 3-13, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over:**

a. **Rieke et al. (US Patent No. 3,647,617)**

or

b. **Morris et al. (US Patent No. 6,500,556)**

in view of Heffelfinger et al. (US Pub 2002/0155308 A1).

(Claims 3-5 and 7) Rieke ('617) and Morris ('556) each teach a reflective film that meets the limitations of Claim 1.

Neither Rieke nor Morris discloses a middle portion of the polymer film (Claims 3-5) or addition of slip or antiblock agents to the polymer layers.

However, Heffelfinger ('308) teaches a polymer film laminate that has a specific multilayered structure that has the advantage of enhancing overall film structural integrity *(par. [0037])*. The structure includes at least one additional polymer layer disposed on either surface of a core middle layer and can be represented by the multilayer structure "ABCDE", where "C" represents the core layer *(par. [0025])*.

The core layer "C" is polypropylene having a melt index of about 1.5 to 4 g/10 min with a melting point of about 140-150°C or higher *(par. [009], [0014-0018])*.

This teaching corresponds to the middle layer of the instant claims.

Heffelfinger teaches outer layers "A" and "E" are ethylene-vinyl acetate (EVA) copolymer *(par. [0019])* or polymers derived from polyethylene including low density polyethylene (LDPE) or linear LDPE (LLDPE), having a melt index of about 0.3 to about 15

g/10 min *(par. [0023])*. The Examiner notes that the melting point of the core polypropylene layer "C" is higher than that of the outermost layers "A" or "E"

Therefore, Heffelfinger teaches that the core polypropylene layer will be more heat resistant ("formulated to provide heat resistance").

Heffelfinger further discloses that the additional one or more polymer layers may contain appropriate additives such as antiblocking and slip agents *(par. [0026])*.

Heffelfinger provides specific examples having a polypropylene core, and metallocene catalyzed polyethylene as the outermost layers A and E, with a melt index from 3.5-4 g/10 min and density of 0.910 and a silica antiblock agent *(Examples 2, 4-6)*, where Heffelfinger teaches that antiblock agents are often added to extruded polymeric compositions to prevent sticking of the polymer to the extrusion equipment *(par. [0026])*. The Examiner notes that this polymer layer corresponds to first outer portion (a)-(i) of the instant claims.

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the reflective film taught by either (a) Rieke or (b) Morris by adding a middle layer of polypropylene as taught by Heffelfinger, and to adjust the density of the polymer layers accordingly because as discussed above, Heffelfinger teaches that this multilayered film structure enhances the overall structural integrity of thin polymer film or film composite laminates.

At the time the invention was made, it would have further been obvious to one having ordinary skill in the art to include an antiblock agent as taught by Heffelfinger in the polymer films taught by either (a) Rieke or (b) Morris because use of such agents are commonly known additives in the art of extruding polymer compositions, where such agents are added to modify or

enhance (optimize) certain properties of multilayer films for specific end-uses as a results effective variable *(par. [0026])*.

(Claim 8) Rieke ('617) and Morris ('556) each teach a reflective film that meets the limitations of Claim 1.

Neither Rieke nor Morris discloses that the polymer film is surface treated.

However, Heffelfinger teaches that an additional coating or material may be applied to either one or both faces of the polymer film laminate (A or E) as discussed above, where the material can be a metal foil such as aluminum foil; nonwoven tissue; another polymer film or laminate; cellulosic webs such as corrugated paperboard, craft paper, cartonboard *(par. [0034])*.

Heffelfinger likewise teaches that the outermost additional polymer layers (A or E) may be treated (e.g. corona discharge, flame treatment) to increase the surface energy and therefore ensure that a coating layer or material will be strongly adherent thereto, thereby reducing the possibility of peeling or being stripped from the film *(par. [0033])*.

Further, Heffelfinger teaches that adhesion of additional materials to the outermost polymer layers of the polymer laminate may be achieved through use of a hot melt adhesive such as LDPE or ethylene methacrylate copolymer *(par. [0034])*.

As discussed above, the Examiner has reason to believe that the polymers taught by either (a) Rieke or (b) Morris have a surface energy of at least 35 dynes, and points out that both teach an acid content of an ethylene acrylic acid copolymer, where one having ordinary skill in the art would readily recognize that the hydrophilicity of polymeric surfaces (surface energy) is increased by adjusting the acid content.

Heffelfinger teaches that it is well-known in the art to increase the surface energy of polymer films through surface treatment whereby oxygen-containing functional groups are introduced to the surface.

Therefore, at the time the invention was made, it would have been obvious to one having ordinary skill in the art to surface treat the polymer film or film composite taught by either (a) Rieke or (b) Morris as taught by Heffelfinger because this results in a polymer film with higher surface energy and will therefore have improved adhesion to other materials such as the aluminum foil layer taught by either (a) Rieke or (b) Morris.

(Claims 12-13) Rieke ('617) and Morris ('556) each teach a reflective film that meets the limitations of Claim 1.

The Examiner points out that as discussed above, Morris teaches use of a thermal adhesive.

Neither Rieke nor Morris discloses adhesion of the Aluminum foil using the claimed curable or cross-linking adhesives or that the foil layer is primed before being adhered to the polymer film.

The Examiner notes that Morris teaches that the polar foil layer may be surface treated to improve adhesion to the non-polar polymer film *(Col 2, lines 40-48)* and that polyurethane-based primers known in the art may likewise be applied *(Col 2, lines 48-49)*.

However, Heffelfinger teaches that the outer surfaces of the polymer film or film laminate (layers A or E) may be primed with an epoxy primer *(par. [0032])*.

The Examiner deems that application of an adhesion promoting primer to either one or both surfaces to be adhered is well known in many arts when good adhesion between two surfaces is desired.

As Heffelfinger teaches use of a curable epoxy primer on one surface, at the time of the invention, it would have been obvious to one having ordinary skill in the art to apply the primer to the Aluminum foil instead of to the surface of the polymer film laminate because this inference of obviousness would have been drawn from creative steps that a person of ordinary skill in the art would normally employ. It would have been obvious to use the known step of applying a primer to a surface to be adhered to another surface, particularly to the aluminum foil surface, in order to accomplish the end result of improving the adhesive bond between the two surfaces in the same way.

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the reflective film taught by either (a) Rieke or (b) Morris to include a curable or cross-linking adhesive disposed between the Aluminum foil and polymer film as taught by Heffelfinger because as both Heffelfinger and Morris teach, it is widely known in the art of laminating foils to films to prime the surfaces to further improve the adhesion and prevent the delamination of the foil from the polymer film.

(Claims 9-11, 15, and 17-18) The Examiner notes that **Claims 9-11, 15, and 17-18** are product-by-process claims, where although the primary references may not disclose the steps of the instant claims, it is noted the "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the

product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process", *In re Thorpe,* 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi,* 710 F.2d 798, 802, 218, USPQ 289, 292 (Fed. Cir. 1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed (process) and given that the primary references meet the requirements of the claimed composition, they clearly meet the requirements of present claims 9-11, 15, and 17-18, capable of being made in the manner described.

The Examiner notes that one having ordinary skill in the art would readily recognize that use of a hot melt adhesive involves use of heat and pressure to laminate materials, thus as (a) Rieke and (b) Morris both teach use of such adhesives, the reflective film is capable of being made by a heat and pressure laminator. Furthermore, Rieke teaches heating and extruding of the polymer film onto the aluminum foil, which is subsequently passed through pressurized rollers and cooling *(Col 4, lines 30-40)*. Likewise, Morris teaches heating and co-extrusion of the polymer film composite, coating of the film onto aluminum foil, followed by cooling of the reflective film on nip rollers (pressure) *(Col 4, lines 36-54)*.

(Claims 6 and 15-19) Regarding the limitations toward the "construction material" of **Claims 15-19**, the Examiner notes as above, that this is considered to be an intended use of the Applicant's claimed reflective film.

Rieke teaches a reflective film that meets the limitations of Claim 1 and as discussed above, discloses that such films are useful in building and insulation panels.

Morris likewise teaches a reflective film that meets the limitations of Claims 1-2.

Heffelfinger teaches a multilayered polymer film laminate that is capable of having other materials adhered to either or both surfaces such as aluminum foil; nonwoven tissue; another polymer film or laminate; cellulosic webs such as corrugated paperboard, craft paper, cartonboard *(par. [0034])*. The Examiner notes that these materials are all materials used in construction materials (e.g. drywall, paper-laminated insulation, weather seal, waterproofing plastic underlays).

These teachings therefore correspond to the Applicant's claims toward construction materials including a structural or non-structural plastic (another polymer film or laminate).

Therefore, given the particular utility of such foil-polymer film laminates in building and insulation panels as taught by Rieke, it would have been obvious to one having ordinary skill in the art at the time of the invention to adhere the foil-polymer film laminate taught by either (a) Rieke or (b) Morris to a construction material as taught by Heffelfinger depending on the desired use of the composite laminate, because such laminates are useful in building or insulation panels.

Further, with respect to the limitations of **Claim 6**, given the teaching in Heffelfinger that the polymer film is capable of being adhered to craft paper, it would have been obvious to one having ordinary skill in the art to modify the reflective film of either (a) Rieke or (b) Morris by including kraft paper layer(s) in the middle with the polypropylene core of Heffelfinger because one having ordinary skill in the art would readily recognize that such a layer is capable of bonding to materials such as kraft paper, and that inclusion of kraft paper layers in the core layer

will provide additional structural integrity to the overall laminate structure and reduce the susceptibility of the material to tearing easily and degrading.

7. **Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over:**

a. **Rieke et al. (US Patent No. 3,647,617)**

or

b. **Morris et al. (US Patent No. 6,500,556)**

in view of Heffelfinger et al. (US Pub 2002/0155308 A1) and Fahmy et al. (US Pat No 6286280).

As discussed above, Rieke ('617) and Morris ('556) each teach a reflective film that meet the limitations of Claim 1.

Neither (a) Rieke nor (b) Morris specifically teach that the polymer film or film composite additionally includes a middle portion consisting of one or more layers of kraft paper.

However, as discussed above, Heffelfinger teaches a multilayered polymer film laminate that is capable of having other materials adhered to either or both surfaces including cellulosic webs such as corrugated paperboard, craft paper, cartonboard *(par. [0034])*.

The only difference is that Heffelfinger does not specifically disclose that these paper layers are disposed in the middle of the polymer film laminate.

However, Fahmy ('280) discloses a aluminum foil-polymer film laminate containing several kraft paper layers in the middle of the polymer film that can be applied to a construction material such as wood, which is particularly useful in roofing applications *('280; Fig. 3: wood-based panel layer 48, metal foil layer 52, polymer layers 50 and 54; Cols 2-3, lines 66-67 and 1-*

12 teach LDPE and 0.002 inch converter grade aluminum foil; Col 3, lines 48-51 teach use of the foil-polymer laminate in roofing applications).

Fahmy teaches that the use of such a combination of materials provides a composite laminate is not only durable, but limits the passage of liquid water and provides fire resistance *('280; Col 1, lines 23-26).*

Fahmy ('280) specifically teaches that the reflective film polymer composite has a middle structure containing a plurality of kraft paper layers, where the kraft paper offers the property of water-resistance to the flame-retardant reflective film used in construction materials *('280; Col 2, lines 1-49).*

As discussed above, one having ordinary skill in the art would readily recognize that if the outer layer of the polymer multilayer film taught by Heffelfinger is capable of bonding to kraft paper, then the polymer layers in the middle are likewise capable of bonding to kraft paper, and that it would have been obvious to try the specific structure of the polymer film with the middle layer having kraft paper layers to enhance the overall structural stability of the aluminum foil-polymer film laminate.

As discussed above, Rieke teaches that such reflective films are particularly useful in building and insulation panels, and Fahmy likewise discloses use of such reflective films in roofing applications.

Therefore, such reflective films are capable of being adhered to other materials, where the Examiner notes use of kraft paper and paperboard is commonly used in building and insulation panels.

At the time of the invention, it would have been obvious to one having ordinary skill in the art to include one or more layers of kraft paper as taught by Fahmy ('280) in the middle portion of the polymer film composite taught by either (a) Rieke or (b) Morris in view of Heffelfinger because the kraft paper offers additional physical properties such as water-resistance and the overall mechanical durability of the polymer film composite would be improved by including one or more kraft paper layers, in addition to providing water-resistance and flame-retardant properties.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Kong (US Pub. 20020187326), Gibbons et al. (US Pat No. 5,589,280), Hejna (US Pat No 6,800,352, priority date 11/5/2001), and Liu et al. (US Pat No. 4,865,908) all disclose thin aluminum foil-polymer film laminates.

b. Feinberg (US Patent 5160788) teaches use of ethylenically unsaturated carboxylic acids as adhesives to bond polar substrates such as aluminum foil to nonpolar substrates such as a polyethylene film.

c. *Polymer Handbook* (Chapter VI, B. Table 2., pp. 524-541; Brandrup, J.; Immergut, Edmund H.; Grulke, Eric A.; Abe, Akihiro; Bloch, Daniel R. Polymer Handbook (4th Edition). John Wiley & Sons. 1999, 2005.) provides tables of standard surface energies of ethylene-based polymers.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to APRIL C. INYARD whose telephone number is (571) 270-1245. The examiner can normally be reached on Monday - Thursday 8:00 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

APRIL C INYARD /A. C. I./
Examiner, Art Unit 1794